UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

February 7, 2023

Ms. Jamie Coleman
Regulatory Affairs Director
Southern Nuclear Operating Company
7825 River Road, BIN 63031
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 4 – NRC INTEGRATED INSPECTION REPORT 05200026/2022007

Dear Ms. Coleman:

On December 31, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at Vogtle Electric Generating Plant (VEGP), Unit 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on January 25, 2023, with Mr. G. Chick, VEGP Units 3 and 4 Executive Vice President, and other members of your staff.

The inspection examined a sample of construction activities conducted under your Combined License (COL) as it relates to safety and compliance with the Commission's rules and regulations and with the conditions of these documents. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The NRC inspectors documented one finding of very low safety significance (Green) in this report. The finding involved a violation of NRC requirements. The NRC is treating the violation as a noncited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or significance of the NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC Resident Inspector at VEGP, Units 3 & 4.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC Resident Inspector at VEGP, Units 3 & 4.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the Code of Federal Regulations 2.390, “Public Inspections, Exemptions, Requests for Withholding.” Should you have any questions concerning this letter, please contact me at 404- 997-4510.

Sincerely,

Signed by Coovert, Nicole
on 02/07/23

Nicole Coovert, Chief
Construction Inspection Branch 1
Division of Construction Oversight

Docket No.: 5200026
License No: NPF-92

Enclosure:
NRC Inspection Report (IR) 05200026/2022007
w/attachment: Supplemental Information

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SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNIT 4 – NRC INTEGRATED INSPECTION REPORT 05200026/2022007 Dated February 7, 2023

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U.S. NUCLEAR REGULATORY COMMISSION
Region II

Docket Numbers:	5200026
License Numbers:	NPF-92
Report Numbers:	05200026/2022007
Licensee:	Southern Nuclear Operating Company, Inc
Facility:	Vogtle Unit 4 Combined License
Location:	Waynesboro, GA
Inspection Dates:	October 1, 2022, through December 31, 2022
Inspectors:	B. Kemker, Senior Resident Inspector, Division of Construction Oversight (DCO) B. Griman, Resident Inspector, DCO T. Fredette, Reactor Operations Engineer, Office of Nuclear Reactor Regulation – Vogtle Project Office G. Khouri, Senior Construction Inspector, DCO J. Lizardi-Barreto, Construction Inspector, DCO R. Mathis, Senior Construction Inspector, DCO R. Patel, Senior Construction Inspector, DCO A. Ponko, Senior Construction Inspector, DCO J. Vasquez, Construction Inspector, DCO
Approved by:	Nicole Coovert, Chief Construction Inspection Branch 1 Division of Construction Oversight

SUMMARY OF FINDINGS

Inspection Report (IR) 05200026/2022007; 10/01/2022 through 12/31/2022; Vogtle Unit 4 Combined License, Integrated Inspection Report.

This report covers a three-month period of inspection by regional, headquarter, and resident inspectors. One construction finding of very low safety significance (Green) with an associated noncited violation (NCV) was identified. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red), which is determined using Inspection Manual Chapter (IMC) 2519, "Construction Significance Determination Process." Cross-cutting aspects are determined using IMC 0613, Appendix F, "Construction Cross-Cutting Areas and Aspects." All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy. The NRC's program for overseeing the safe construction of commercial nuclear power reactors is described in IMC 2506, "Construction Reactor Oversight Process General Guidance and Basis Document."

A. NRC-Identified and Self Revealed Findings

(Green) A construction finding of very low safety significance (Green) with an associated NCV of Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified for the licensee's failure to include the insulation resistance (megger) testing of certain "Y" service cables as required by specification APP-G1-V8-001 and procedure 26139-000-4MP-T81C-N3305, Appendix 1. The failure to include megger testing of certain "Y" service cables as required by the specification and the procedure was a violation of 10 CFR Part 50, Appendix B, Criterion V, and was a performance deficiency (PD). The licensee entered this issue into its corrective action program as condition reports 50159622 and 50164626. As immediate corrective actions, the licensee meggered the missed cable to restore compliance, commenced an extent of condition review, and initiated an evaluation of procedure revision.

The PD was of more than minor safety significance, and thus a finding, because it represented an adverse condition where the meggering requirements for the "Y" type service cables were not included in the testing procedure that rendered the quality of the safety function associated with the protection and safety monitoring system indeterminate and required substantive corrective action. Specifically, the failure to include the insulation resistance (megger) testing of certain "Y" service cables resulted in cable SV4-CVS-EW-PLV045JYA not being megger tested and rendered the capability of letdown containment isolation valve CVS-PL-V045 indeterminate in the event of receiving a containment isolation signal. This violation was determined to be a construction finding because the finding is not material to the acceptance criteria of an ITAAC. The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Documentation, in the area of Human Performance in accordance with IMC 0613, Appendix F, Construction "Cross-Cutting Areas and Aspects," dated November 4, 2020. The proximate cause of the PD was attributed the failure to create and maintain complete, accurate and up-to-date procedure documentation. [H.7]. (Section 1P02)

B. Licensee-Identified Violations

None.

REPORT DETAILS

Summary of Plant Construction Status

Unit 4: The licensee completed construction of the shield building and the auxiliary building structures. The licensee also completed open vessel testing and satisfactorily performed the American Society of Mechanical Engineers (ASME) required hydrostatic test on the reactor coolant system (RCS). In the containment and auxiliary buildings, the licensee continued with installation of safety-related instrumentation, electrical conduits and cables (safety and nonsafety-related), necessary to support hot functional testing.

1. CONSTRUCTION REACTOR SAFETY

Cornerstones: Design/Engineering, Procurement/Fabrication, Construction/Installation, Inspection/Testing

IMC 2503, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) - Related Work Inspections

1A01 (Unit 4) ITAAC Number 2.1.02.02a (13) / Family 06F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.02a (13). The inspectors used the following NRC inspection procedures (IPs)/sections to perform this inspection:

- 65001.C - Inspection of the ITAAC-Related Construction Test Program
- 65001.C-02.01 - Program and Procedure Reviews
- 65001.C-02.02 - Construction Test Observation
- 65001.C-02.03 - Construction Test Record Review
- 65001.C-02.04 - General Quality Assurance Review
- 65001.C-A2 - Appendix 2 - Construction Test Inspection for Piping Systems and Components
- 65001.C-A2.03 - Piping
- 65001.C-A3.06 - Mechanical Components
- 65001.C-A3.07 – Valves

The inspectors performed a direct inspection of ASME Code Section III hydrostatic testing activities associated with the Unit 4 RCS and connecting systems pressure boundary components and piping identified as ASME Code Section III in Tables 2.1.2-1 and 2.1.2-2 of Appendix C to the Vogtle Unit 4 Combined License (COL) to verify conformance with the requirements of the ASME Code Section III.

The inspectors reviewed the work package for the piping and components associated with ASME Code Section III hydrostatic test procedure 4-RCS-ITPP-503, “Reactor Coolant System Cold Hydrostatic Test - Preoperational Test Procedure.” The inspectors reviewed the work package instructions and the licensee's procedure for construction pressure testing to determine whether the following test attributes were included:

- the system boundary included all pressure vessels, piping, pumps, and valves that were part of the piping system to be tested;
- the system was vented during the filling operation;
- water quality was specified as required by the latest licensee approved specifications for the temperatures to be present during the test;
- temperature requirements were stated to ensure components were maintained above the nil-ductility transition temperature during hydrostatic pressure testing;
- minimum hydrostatic test pressure was as specified in the applicable design and/or fabrication specification; maximum hydrostatic test pressure was less than the limits in the applicable design and/or fabrication specification;
- hydrostatic test pressure was maintained for a minimum of 10 minutes before initiation of the examination for leakage; and
- examination for leakage included all joints, connections, and regions of high stress, such as openings, attachments, and thickness transition sections at a pressure equal to the design pressure or three-fourths of the test pressure, whichever was greater.

The inspectors conducted walkdowns prior to the test to verify valve positions and system boundaries were set up in accordance with the system boundary maps within the work package. The inspectors also verified the fill points and vent points were set up in accordance with the work package.

The inspectors observed the ASME Code Section III hydrostatic test to determine if the testing was conducted in accordance with the requirements of Section III, Subsection NB-6000, the work package instructions, and the licensee's procedure 4-RCS-ITPP-503 for construction pressure testing. Specifically, the inspectors observed the test to determine if:

- the latest revision of the test procedure was available and used;
- test prerequisites were met;
- joints, including welded joints, were left uninsulated and exposed for examination during the tests;
- valve lineup/system checklists were completed;
- water quality and temperature were as stated in the procedures;
- calibrated pressure gauges of the required range were installed where required;
- calibrated relief valves of the required set point and capacity were installed where required;
- testing was performed as required by the approved procedure;
- crew actions were correct and timely during the performance of the test and coordination existed among crew members to conduct the test;
- temporary modifications such as jumpers, strainers, spool pieces, or blank flanges were installed and tracked per established administrative controls; and
- overall test acceptance criteria were satisfied.

The inspectors also reviewed the results from the 4-RCS-ITPP-503 procedure to determine if the results conformed to the requirements of Section III, Subsection NB-6000.

b. Findings

No findings were identified.

1A02 (Unit 4) ITAAC Number 2.1.02.08d.ii (33) / Family 03F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.08d.ii (33). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.03-02.07 - Review of Records
- 65001.F-02.01-Design Document Review

The inspectors reviewed the principal closure document (PCD) and associated Westinghouse calculation for this ITAAC to determine if the calculated flow resistance for each as-built fourth-stage automatic depressurization system (ADS) sub-loop valve and piping was less than the values listed in the acceptance criteria. The inspectors verified the assumptions and values used were acceptable for both the design and as-built calculations and the results from the as-built calculations were bounded by the design resistances listed in the ITAAC acceptance criteria, which were also used in the Chapter 15 safety analysis of the VEGP 3 and 4 Updated Final Safety Analysis Report (UFSAR). The inspectors also conducted a walkdown and performed independent measurements for a sample of dimensions on sub-loop A and sub-loop C to determine if they matched the piping isometrics and the values used in the calculation.

b. Findings

No findings were identified.

1A03 (Unit 4) ITAAC Number 2.2.01.01 (90) / Family 11A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.01 (90). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed an inspection of the Unit 4 containment system (CNS) functional arrangement to verify the as-built system piping and components conform to the system design description in Section 2.2.1 of Appendix C of the Vogtle Unit 4 COL, including Table 2.2.1-1, Table 2.2.1-2, and Figure 2.2.1-1.

The inspectors performed independent field walkdowns and reviewed quality records including the PCD, piping and instrumentation diagrams, and functional arrangement sketches to verify the CNS penetrations, hatches, instruments, isolation valves, and associated piping were physically arranged consistent with Figure 2.2.1-1 and located as identified in Table 2.2.1-4 of Appendix C of the Vogtle Unit 4 COL, such that the components will support system functions described in the design description in Section 2.2.1 of Appendix C of the Vogtle Unit 4 COL and Section 6.2.3 of the UFSAR. System installation attributes inspected included proper location, placement (such as relative elevation), quantity, material type/shape/size, physical orientation, flow direction, and alignment.

b. Findings

No findings were identified.

1A04 (Unit 4) ITAAC Number 2.6.03.02.i (597) / Family 08A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.03.02.i (597). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.02 - Attributes of Electrical Cable installation
- 65001.09-02.03 – Documentation

The inspectors performed a walkdown of selected Unit 4 division A Class 1E dc and uninterruptible power supply system (IDS) installed components to confirm satisfactory installation of associated cable raceways and conduit, cable/wiring, IDS component penetrations and terminations. Additionally, the inspectors assessed penetrations that included Roxtec electromagnetic compatibility hardware to verify correct installation and configuration to ensure free-air cable physical separation. The inspectors verified the cables and raceways had sufficient physical separation between Class 1E cables of different divisions, separation from non-Class 1E cables, and were identified by an appropriate color coding scheme per design basis requirements. IDS components included the following:

- IDSA-DS-1 (division A 250 Vdc switchboard)
- IDSA-DU-1 (division A 24-hour inverter)
- IDSA-DT-1 (division A regulating transformer)
- IDSA-EA-1 (120 Vac distribution panel 1)
- IDSA-EA-2 (120 Vac distribution panel 2)
- IDSA-EA-4 (division A low voltage fuse panel)
- IDSA-EA-5 (battery monitor fuse panel)
- IDSA-DF-1 (division A fused transfer switch)

b. Findings

No findings were identified.

1A05 (Unit 4) ITAAC Number 2.6.03.07 (616) / Family 08F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.03.07 (616). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.08-02.02 - In-Process Installation
- 65001.A-02.03 - Independent Assessment (Walkdown) of As-Built System
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

The inspectors performed walkdowns of the following IDS division B components: 72-hour battery charger SV4-IDSB-DC-2, 250 Vdc switchboard SV4-IDSB-DS-2, 24-hour and 72-hour inverters SV4-IDSB-DU-1 and DU-2, distribution panels SV4-IDSB-DD-1 and SV4-IDSB-EA-2, and fused transfer switch SV4-IDSB-DF-2. The inspectors also performed a walkdown of IDS division A direct current motor control center SV4-IDSA-DK-1. The inspectors verified component manufacturer nameplate data that defines parameters such as fault current, voltage, and continuous current ratings, matched those specified in IDS design documents.

b. Findings

No findings were identified.

1A06 (Unit 4) ITAAC Number 3.3.00.01 (759) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.01 (759). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.A.02.01 - Observation of in-Process Installation Activities
- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection of the Unit 4 as-built nuclear island structures, the annex building, the radwaste building, the turbine building, and the diesel generator building to verify the structures conform with the physical arrangement described in the Design Description of Section 3.3 of Appendix C of the Vogtle Unit 4 COL, including Figures 3.3-1 through 3.3-14.

The inspectors performed walkdowns with the licensee of selected portions of the containment building, auxiliary building, and shield building to assess whether the as-built structures were physically arranged consistent with Figures 3.3-1 through 3.3-14 of Appendix C of the Vogtle Unit 4 COL. Additionally, the inspectors performed independent walkdowns of other selected portions of the containment building, auxiliary building, shield building, annex building, radwaste building, turbine building, and diesel

generator building to assess whether the as-built structures were physically arranged consistent with Figures 3.3-1 through 3.3-14 of Appendix C of the Vogtle Unit 4 COL.

The inspectors also reviewed quality records including the PCD and architectural drawings to verify the as-built structures conformed with the Design Description of Section 3.3 of Appendix C of the Vogtle Unit 4 COL and Figures 3.3-1 through 3.3-14.

b. Findings

No findings were identified.

1A07 (Unit 4) ITAAC Number 3.3.00.02a.i.d (763) / Family 01F

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.02a.i.d (763). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01 - Inspection of ITAAC-Related Foundations & Buildings
- 65001.01-02.01 - Procedures
- 65001.01-02.05 - Steel Structures
- 65001.01-02.06 - Records
- 65001.01-02.07 - Identification and Resolution of Problem
- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements
- 65001.F-02.01-Design Document Review
- 65001.F-02.02-Fabrication Records Review

The inspectors performed a review of the licensee's corrective actions associated with weld repairs of the Unit 4 spent fuel pool and fuel transfer canal.

The inspectors reviewed nonconformance and disposition report (N&D) SV4-CA20-GNR-000380 and associated corrective actions to verify nonconforming conditions were appropriately evaluated, approved, and dispositioned in accordance with applicable technical and quality assurance (QA) requirements. The inspectors reviewed the nondestructive examination methodology and records to verify the weld repairs and inspection activities were performed in accordance with the requirements of the Westinghouse Electric Corporation (WEC) specification APP-GW-Z0-105 and American Welding Society D1.6:1999 Structural Welding Code for Stainless Steel.

b. Findings

No findings were identified.

1A08 (Unit 4) ITAAC Number 3.3.00.07d.i (799) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07d.i (799). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.02 - Attributes of Electrical Cable Installation
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review

The inspectors performed a direct inspection of raceways inside the main control room (MCR). The inspectors conducted walkdowns of the raceways to verify separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables. The inspectors verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways. The inspectors reviewed construction specifications, installation procedures, written instructions, drawings, work packages, and quality control (QC) inspection records to verify the Class 1E raceways were designed and installed in accordance with installation requirements.

For the raceways in the MCR, the inspectors verified the size, material, and style were as specified in design documents, and cable tray, conduit fittings, and clamps were installed according to work procedures. The inspectors verified raceway supports were located at points specified in approved instructions, maximum distance between supports were not exceeded, cable tray fill limitations were met, and ground connections were installed. The inspectors reviewed the licensee's corrective actions to verify issues were properly identified, evaluated, and corrected.

b. Findings

No findings were identified.

1A09 (Unit 4) ITAAC Number 3.3.00.07d.ii.a (800) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07d.ii.a (800). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.02 - Attributes of Electrical Cable installation
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review

The inspectors inspected cable pulls and terminations in rooms located inside the containment building. The rooms inspected were the maintenance floor (room 11300)

and passive core cooling system (PXS) valve/accumulator room A (room 11206). The inspectors conducted walkdowns of the cable pulls and terminations inside the rooms to verify separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables. During the walkdown, the inspectors verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways.

The inspectors reviewed applicable construction specifications, installation procedures, written instructions, drawings, work packages, and QC inspection reports to verify raceways that route Class 1E cables were installed in accordance with design requirements. The inspectors reviewed work packages, test and inspection records, and cable pull tickets to confirm the non-Class 1E cables needed to meet the ITAAC requirements of Appendix C of the COL were installed at the time of ITAAC verification.

Additionally, the inspectors reviewed the licensee's corrective actions for issues entered into the corrective action program (CAP) to verify issues were identified, evaluated, and corrected.

Note that Unit 4 License Amendment 187, which was issued on November 22, 2022, authorized the consolidation of the containment electrical separation ITAACs into a single ITAAC. The requirements of ITAAC 789, 792, 803, 806, and 809 have now been combined into ITAAC 800.

b. Findings

No findings were identified.

1A10 (Unit 4) ITAAC Number 3.3.00.07d.ii.b (801) / Family 09A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.07d.ii.b (801). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.09-02.01 - Physical Separation of Cables
- 65001.09-02.02 - Attributes of Electrical Cable installation
- 65001.09-02.03 - Documentation
- 65001.09-02.04 - Problem Identification and Resolution
- 65001.A.02.02 - Installation Records Review

The inspectors inspected cable pulls and terminations in rooms located inside the non-radiologically controlled area of the auxiliary building. The rooms inspected were the division B instrumentation and control (I&C) penetration room (room 12304), division D I&C penetration room (room 12305), demineralizer/filter access area (room 12251), and division B battery room 2 (room 12204). The inspectors conducted walkdowns of the cable pulls and terminations inside the rooms to verify separation between raceways that route Class 1E cables of different divisions, and between raceways that route

Class 1E cables and raceways that route non-Class 1E cables. During the walkdown, the inspectors verified the raceways and cables were identified by the appropriate color code and the division cables were routed in their respective raceways.

The inspectors reviewed applicable construction specifications, installation procedures, written instructions, drawings, work packages, and QC inspection reports to verify raceways that route Class 1E cables were installed in accordance with design requirements. The inspectors reviewed work packages, test and inspection records, and cable pull tickets to confirm the non-Class 1E cables needed to meet the ITAAC requirements of Appendix C of the COL were installed at the time of ITAAC verification.

Additionally, the inspectors reviewed the licensee's corrective actions for issues entered into the CAP to verify issues were identified, evaluated, and corrected.

Note that Unit 4 License Amendment 187, which was issued on November 22, 2022, authorized the consolidation of the electrical separation ITAACs for the non-radiologically controlled area of the auxiliary building into a single ITAAC. The requirements of ITAAC 790, 793, 804, 807, and 810 have now been combined into ITAAC 801.

b. Findings

No findings were identified.

1A11 (Unit 4) ITAAC Number 3.3.00.10.ii (816) / Family 06D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.10.ii (816). The inspectors used the following NRC IP/section to perform this inspection:

- 65001.F- Inspection of the ITAAC-Related Design and Fabrication Requirements

The inspectors reviewed the passive containment cooling system (PCS) storage tank structural behavior inspection report to verify inspection and measurement of the PCS storage tank and the tension ring structure, before and after filling of the tank, showed structural behavior under normal loads to be acceptable. Specifically, the inspectors verified the measured deflection of the conical roof structure after filling the tank was within the acceptable range accounting for temperature effects and measurement tolerances.

The inspectors also reviewed the PCS storage tank structural behavior inspection report to determine if any visible water leakage from the PCS storage tank through the concrete and/or excessive cracking in the boundaries of the PCS storage tank and shield building roof above the tension ring were observed after filling of the tank.

b. Findings

No findings were identified.

1A12 (Unit 4) ITAAC Number 3.3.00.13 (819) / Family 01A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 3.3.00.13 (819). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.01-02.04 - Key Dimensions and Volumes
- 65001.01-02.06 - Records
- 65001.A.02.01 - Observation of In-Process Installation Activities
- 65001.A.02.02 - Installation Records Review

The inspectors performed an inspection to verify the minimum horizontal clearance between structural elements of the Unit 4 nuclear island and turbine building from floor elevations 100 feet (') - 0 inches (") to 135'-3" was greater than or equal to 3” as specified in Table 3.3-6 of the Vogtle 3&4 Tier 1 document. Specifically, the inspectors independently measured and accompanied licensee staff conducting measurements to verify the separation between the annex building and the nuclear island was at least three inches, as required by Appendix C of the Unit 4 COL.

The inspectors reviewed the licensee's PCD for this ITAAC, including the survey results, to determine if the results and methods used met the ITAAC acceptance criteria. Specifically, the inspectors reviewed survey results and the PCD to determine if separation was provided between the structural elements of the turbine and annex buildings and the nuclear island structure.

The inspectors verified a minimum horizontal clearance above floor elevation 100'-0" between the structural elements of the annex building and the nuclear island, and between the turbine building and the nuclear island was 3”; except the minimum north-south horizontal clearance between elevations 141’-0" and 154'-0" and between structural elements of the annex building and the nuclear island west of column line I was 2-1/16” in accordance with the acceptance criteria of ITAAC 3.3.00.13.

b. Findings

No findings were identified.

1A13 (Unit 4) ITAAC Number C.2.5.04.04a (561) / Family 10A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number C.2.5.04.04a (561). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.10 - Inspection of ITAAC-Related Installation of Instrument Components and Systems
- 65001.10-02.02.a - In-Process Installation
- 65001.10-02.02.c - As Built Verification

- 65001.A- As-Built Attributes for SSCs associated with ITAAC
- 65001.A.02.02 - Installation Records Review
- 65001.A.02.03 - Independent Assessment/Measurement Inspection

The inspectors performed an inspection of the Unit 4 plant operating instrumentation installed for feedwater flow measurements, its associated power calorimetric uncertainty calculation, and the calculated calorimetric values to verify the acceptance criteria of the ITAAC.

The inspectors reviewed the QA data package for the Caldon [Cameron] Leading Edge Flowmeter (LEFM) CheckPlus™ System and the construction work packages for installation of the instruments in the plant to verify the as-built system takes input for feedwater flow measurement from a Caldon [Cameron] LEFM CheckPlus™ System as specified in Table 2.5.4-2 of Appendix C to the Vogtle Unit 4 COL. The inspectors reviewed these documents and performed field inspection to verify the correct components were received on-site and were installed in the plant.

The inspectors reviewed the generic power calorimetric uncertainty calculation documented for the instrumentation to verify it was based on an accepted Westinghouse methodology and the uncertainty values for the instrumentation were not lower than those for the actual installed instrumentation as specified in Table 2.5.4-2 of Appendix C to the Vogtle Unit 4 COL. The inspectors also reviewed the site specific reconciliation of the Westinghouse methodology report with the installed instrumentation to verify the calculated calorimetric power uncertainty measurement values were bounded by the 1% uncertainty value assumed for the initial reactor power in the safety analysis as specified in Table 2.5.4-2 of Appendix C to the Vogtle Unit 4 COL.

b. Findings

No findings were identified.

IMC 2504, Construction Inspection Program – Inspection of Construction and Operational Programs

1P01 Construction QA Criterion 16

- 35007-A16.04 - Inspection Requirements and Guidance
- 35007-A16.04.01 - Inspection of QA Implementing Documents
- 35007-A16.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed issues entered into the licensee's CAP daily to assess issues that might warrant additional follow-up inspection, to assess repetitive or long-term issues, to assess adverse performance trends, and to verify the CAP appropriately included regulatory required nonsafety-related structures, systems, and components (SSCs). The inspectors periodically attended the licensee's CAP review meetings, held discussions with licensee and contractor personnel, and performed reviews of CAP activities during the conduct of other baseline inspection procedures. The inspectors

reviewed conditions entered into the licensee's CAP to determine whether the issues were classified in accordance with the licensee's QA program and CAP implementing procedures. The inspectors reviewed corrective actions associated with conditions entered into the CAP to determine whether appropriate actions to correct the issues were identified and implemented effectively, including immediate or short-term corrective actions, in accordance with the applicable QA program requirements and Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix B, Criterion XVI. Additionally, the inspectors reviewed the corrective actions taken to determine whether they were commensurate with the significance of the associated conditions in accordance with the licensee's CAP implementing procedures. The inspectors completed reviews of CAP entry logs to verify issues from all aspects of the project, including equipment, human performance, and program issues, were being identified by the licensee and its contractors at an appropriate threshold and entered into the CAP as required by licensee's CAP implementing procedures.

b. Findings

No findings were identified.

1P02 Inspection Follow-up (Construction)

a. Inspection Scope

The inspectors reviewed implementing procedures for electrical testing to determine testing requirements were included in accordance with design documentation. Specifically, the inspectors reviewed Bechtel procedure 26139-000-4MP-T81C-N3305, “Construction Electrical Testing,” to determine insulation resistance (megger) testing requirements were included as specified in APP-G1-V8-001, “AP1000 Electrical Installation Specification.”

b. Findings

Introduction

The inspectors identified a construction finding of very low safety significance (Green) with an associated noncited violation (NCV) of 10 CFR, Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to include the insulation resistance (megger) testing of certain “Y” service cables as required by specification APP-G1-V8-001,“AP1000 Electrical Installation Specification,” Appendix E, Table E-1.1 and procedure 26139-000-4MP-T81C-N3305, “Construction Electrical Testing,” Appendix 1, “Cable Test Requirements per Cable Classification” (Test Instruction for Cable & Wiring) “Low Voltage Power and Control Wire (600 Volt and Below).”

Description

Appendix 1, paragraph “g”. Specifically, 26139-000-4MP-T81C-N3305, Appendix 1, states “Y” safety class cable type will only receive a continuity check. According to APP-G1-V8-001, Table 3.5.2-A-1, “Y” service cables can be used in circuits rated for

120 Vac, 125 Vdc, or 250 Vdc, including direct current motor-operated valves control, and Class 1E solenoid valves and pilot solenoids for air operated valves (AOVs). APP-G1-V8-001, Appendix E, Table E-1.1 provides megger testing criteria for equipment rated equal to or greater than 250 Volts, which would apply to certain “Y” type cables.

SV4-CVS-EW-PLV045JYA is a “Y” type service cable and is used in a 250 Vdc control circuit for the digital output command to the AOV solenoid for the letdown containment isolation valve (CIV) CVS-PL-V045. Consequently, this cable was not megger tested because of the testing requirements in the “Cable Test Requirements per cable classification” section of 26139-000-4MP-T81C-N3305, Appendix 1. The licensee entered this issue into its CAP under condition report (CR) 50159622 and identified there was conflicting information in Appendix 1 of N3305 regarding the performance of insulation resistance testing on “Y” type cables. As a result, cables for safety-related valves may not have been tested. CR 50164626 was also initiated to address this issue.

Analysis

The licensee’s failure to include the insulation resistance (megger) testing of certain “Y” service cables as required by specification APP-G1-V8-001 and procedure 26139-000-4MP-T81C-N3305, Appendix 1 was a performance deficiency (PD). Per the guidance in IMC 0613, “Power Reactor Construction Inspection Reports,” Appendix B, “Issue Screening,” dated November 4, 2020, the inspectors determined traditional enforcement or enforcement discretion would not apply to this PD. Per further guidance in IMC 0613, Appendix E, "Examples of Minor Construction Issues," the inspectors determined this PD was of more than minor safety significance, and thus a finding, because if left uncorrected, it represented an adverse condition where the meggering requirements for the “Y” type service cables were not included in the testing procedure that rendered the quality of the safety function associated with the protection and safety monitoring system (PMS) indeterminate and required substantive corrective action. Specifically, the failure to include the insulation resistance (megger) testing of certain “Y” service cables resulted in cable SV4-CVS-EW-PLV045JYA not being megger tested and rendered the capability of letdown CIV CVS-PL-V045 indeterminate in the event of receiving a containment isolation signal. The inspectors also reviewed the Appendix E examples of minor issues and found one similar example of a "not minor if" PD. Example 7 was similar, in that the procedure didn’t adequately implement technical or quality requirements leaving a quality process or construction activity unacceptable or indeterminate. The inspectors determined the finding was not material to the acceptance criteria of an ITAAC and therefore it was a construction finding.

The inspectors determined the finding was associated with the Construction/Installation cornerstone of the Construction Reactor Safety strategic performance area. This finding was not associated with a security program; it was not associated with an IMC 2504 operational/construction program; it was not associated with a specific ITAAC and was not material to the ITAAC acceptance criteria; and it was not associated with a repetitive, NRC-identified omission of a program critical attribute. In accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, “AP1000 Significance Determination Process,” dated October 26, 2020, the inspectors determined this finding was of very low safety significance (Green) because the finding was associated with the PMS, a high-risk system, and if left uncorrected, the finding

could reasonably be expected to impair the design function of only one train of a multi-train system.

The inspectors determined the finding was indicative of present licensee performance and was associated with the cross-cutting aspect of Documentation, in the area of Human Performance (H) in accordance with IMC 0613, Appendix F, Construction "Cross-Cutting Areas and Aspects," dated November 4, 2020. The proximate cause of the PD was attributed the failure to create and maintain complete, accurate and up-to-date procedure documentation. [H.7].

Enforcement

10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

APP-G1-V8-001, AP1000 Electrical Installation Specification, Appendix E, Table E-1.1 requires insulation resistance testing of equipment rated 250 Volts and higher.

Bechtel testing procedure 26139-000-4MP-T81C-N3305, Appendix 1 (Test Instruction for Cable & Wiring) for "Low Voltage Power and Control Wire (600 Volt and Below)" states in paragraph "g", "Insulation resistance test (megger) of all conductors for all power cables equal to or greater than 480V AC or equal to or greater than 125V DC."

Contrary to the above, on October 25, 2022, the licensee failed to include insulation resistance (megger) testing of certain "Y" service cables as required by APP-G1-V8-001 and 26139-000-4MP-T81C-N3305, Appendix 1, and as a result, this test was not performed for SV4-CVS-EW-PLV045JYA. The licensee entered this finding into its CAP as CR 50159622. As immediate corrective actions, the licensee meggered the missed cable, with satisfactory results, to restore compliance, commenced an extent of condition review, and initiated an evaluation of procedure revision.

Because this violation was not repetitive or willful, was of very low safety significance, and was entered into the licensee's CAP as CRs 50159622 and 50164626, this violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (NCV 05200026/2022007-01, Failure to Include Certain Cables for Resistance Insulation (Megger) Testing). This construction finding is opened and closed in this report.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

.1 Exit Meeting

On January 25, 2023, the NRC inspectors discussed the results of this inspection with with Mr. G. Chick, VEGP Units 3 and 4 Executive Vice President, and other members of your staff. Proprietary information was reviewed during the inspection period but was not included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensees and Contractor Personnel

C. Castell, WEC Licensing Engineer
N. Chapman, SNC Licensing Engineer
K. Drudy, SNC ITAAC Project Manager
W. Garrett, SNC Licensing Manager
M. Kelley, IEEE 384 ITAAC Project Manager
D. Kettering; SNC Engineering
S. Leighty, SNC Licensing Manager
J. March, SNC Compliance & Concerns Director
T. Mattson, SNC PI/CAP Project Director
K. Phelps, SNC Compliance & Concerns Manager
L. Pritchett, SNC Licensing Engineer
N. Rish, S&W Senior Manager, Construction Engineering and Technical Services
K. Roberts, SNC ITAAC Manager
G. Scott, SNC Licensing Engineer
A. Tyson, SNC Project Manager-Technical Support

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200026/2022007-01	NCV	Open/Closed	Failure to Include Certain Cables for Resistance Insulation (Megger) Testing (Section 1P02)

LIST OF DOCUMENTS REVIEWED

Section 1A01
VEGP 3&4 UFSAR, Section 5.1.2, “Reactor Coolant System and Connected Systems – Design Description,” Revision 7
American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section III, 1998 Edition including 2000 Addenda
APP-RCS-M6-001, “Piping and Instrumentation Diagram Reactor Coolant System,” Revision 20
APP-RCS-M6-002, “Piping and Instrumentation Diagram Reactor Coolant System,” Revision 22
APP-RCS-M6-003, “Piping and Instrumentation Diagram Reactor Coolant System,” Revision 17
APP-PXS-M6-001, “Piping and Instrumentation Diagram Passive Core Cooling System,” Revision 16
APP-PXS-M6-002, “Piping and Instrumentation Diagram Passive Core Cooling System,” Revision 21
APP-PXS-M6-003, “Piping and Instrumentation Diagram Passive Core Cooling System,” Revision 14
APP-RNS-M6-001, “Piping and Instrumentation Diagram Normal Residual Heat Rem. System,” Revision 14
APP-CVS-M6-001, “Piping and Instrumentation Diagram Chemical and Volume Control System,” Revision 16

APP-CVS-M6-005, “Piping and Instrumentation Diagram Chemical and Volume Control System,” Revision 14
4-RCS-ITPP-503, “Reactor Coolant System Cold Hydrostatic Test – Preoperational Test Procedure,” Revision 1
SV4-RCS-THW-1096718, “ASME III – RCS Cold Hydrotest [ASME III Hydrotest of RCS, PXS, CVS &RNS Lines],” Revision 0

Section 1A02
SV4-RCS-ITR-800033, "Unit 4 Inspections and Associated Analysis of each Fourth-stage ADS Sub-loop: ITAAC 2.1.02.08d.ii, NRC Index Number: 33," Revision 0
SV4-RCS-PLW-03A, "Reactor Coolant System Containment Building Room 11301 ADS Stage 4 Piping West Compartment," Revision 5
SV4-RCS-PLW-03B, "Reactor Coolant System Containment Building Room 11301 ADS Stage 4 Piping West Compartment," Revision 5

Section 1A03
VEGP 3&4 UFSAR, Section 6.2.3, "Containment Isolation System," Revision 8
SV4-CNS-ITR-800090, “Unit 4 CNS Functional Arrangement Inspection: ITAAC 2.2.01.01 NRC Index Number 90,” Revision 0
SV4-CAS-M6-005, “Piping and Instrumentation Diagram Compressed and Instrument Air Sys Instrument Air-Containment,” Revision 10
SV4-CAS-M6-012, “Piping and Instrumentation Diagram Compressed and Instrument Air Sys Service Air-Containment,” Revision 6
SV4-CCS-M6-002, “Piping and Instrumentation Diagram Central Chilled Water System,” Revision 7
SV4-CVS-M6-003, “Piping and Instrumentation Diagram Chemical and Volume Control System,” Revision 9
SV4-CVS-M6-005, “Piping and Instrumentation Diagram Chemical and Volume Control System,” Revision 3
SV4-DWS-M6-007, “Piping and Instrumentation Diagram Demin Water Transfer Storage Containment,” Revision 4
SV4-FPS-M6-004, “Piping and Instrumentation Diagram Fire Protection System,” Revision 9
SV4-PCS-M6-003, “Piping and Instrumentation Diagram Passive Containment Cooling System,” Revision 3
SV4-PSS-M6-001, “Piping and Instrumentation Diagram Primary Sampling System,” Revision 9
SV4-PXS-M6-001, “Piping and Instrumentation Diagram Passive Core Cooling System,” Revision 9
SV4-PXS-M6-003, “Piping and Instrumentation Diagram Passive Core Cooling System,” Revision 6
SV4-RNS-M6-001, “Piping and Instrumentation Diagram Normal Residual Heat Rem. System,” Revision 5
SV4-MV50-V1-016, “Containment Vessel Penetration Location,” Revision 1
SV4-SFS-M6-001, “Piping and Instrumentation Diagram Spent Fuel Pool Cooling System,” Revision 8
SV4-SGS-M6-001, “Piping and Instrumentation Diagram Steam Generator System,” Revision 8
SV4-SGS-M6-002, “Piping and Instrumentation Diagram Steam Generator System,” Revision 9
SV4-VFS-M6-001, “Piping and Instrumentation Diagram Containment Air Filtration System,” Revision 14
SV4-VWS-M6-003, “Piping and Instrument Diagram Central Chilled Water System,” Revision 4
SV4-WLS-M6-001, “Piping and Instrumentation Diagram Liquid Rad Waste System,” Revision 4

SV4-CNS-M9K-FA001, “CNS (Containment System) ITAAC Functional Arrangement Guideline Sketch,” Revision 0
SV4-CNS-M6K-FA001, “CNS General Area 1 ITAAC Functional Arrangement Sketch,” Revision 0
SV4-CNS-M6K-FA002, “CNS General Area 2 ITAAC Functional Arrangement Sketch,” Revision 0
SV4-CNS-M6K-FA003, “CNS General Area 3 ITAAC Functional Arrangement Sketch,” Revision 0
SV4-CNS-M6K-FA004, “CNS General Area 5 ITAAC Functional Arrangement Sketch,” Revision 0
SV4-CNS-M6K-FA005, “CNS General Area 5 ITAAC Functional Arrangement Sketch,” Revision 0
SV4-CNS-M6K-FA006, “CNS General Area 6 ITAAC Functional Arrangement Sketch,” Revision 0
SV4-PCS-M6K-FA103, “PCS-M6-003 CNS ITAAC Functional Arrangement Sketch,” Revision 0
SV4-SGS-M6K-FA201, “SGS-M6-001 CNS ITAAC Functional Arrangement Sketch,” Revision 0
SV4-SGS-M6K-FA202, “SGS-M6-002 CNS ITAAC Functional Arrangement Sketch,” Revision 0

Section 1A04
Work Package SV4-IDSA-EWW-1151179 “Electrical Installation Inspection Records for IDS Components”
Condition Report 50163726 (Myers Hub Penetration Hardware Installation)

Section 1A05
SV4-IDS-E0R-004, “Unit 4 IDS System ITAAC 616 As-Built Analysis Report,” Revision 0
APP-DS01-Z0-010, “Specification for Class 1E 250 Vdc Switchboards for System IDS,” Revision 7
APP-PXS-E5-PLV117B01, “Combined Wiring Diagram APP-PXS-PL-V117B, Containment Recirc B Isolation Valve,” Revision 4

Section 1A06
SV4-0000-ITR-800759, "Unit 4 Inspections for Physical Arrangement: ITAAC 3.3.00.01 NRC Index Number 759," Revision 0
APP-1000-AR-901, “NI Room Numbering Section A-A,” Revision 3
APP-1000-AR-902, “NI Room Numbering Section B-B,” Revision 3
APP-1000-AR-903, “NI Room Numbering Sections C-C & H-H,” Revision 3
APP-1000-AR-904, “NI Room Numbering Section G-G,” Revision 3
APP-1000-AR-905, “NI Room Numbering Section J-J,” Revision 3
APP-1000-AR-906, “NI Room Numbering Section K-K,” Revision 4
APP-1000-AR-907, “NI Room Numbering Sections I-I & R-R,” Revision 3
APP-1000-AR-908, “NI Room Numbering Sections P-P & S-S,” Revision 3
APP-1000-AR-909, “NI Room Numbering Sections X-X, Y-Y, & Z-Z,” Revision 3
APP-1010-AR-001, “NI Room Numbering Plan at EL. 66’-6”,” Revision 4
APP-1020-AR-001, “NI Room Numbering Plan at EL. 82’-6”,” Revision 4
APP-1020-AR-002, “NI Room Numbering Plan at EL. 92’-6”,” Revision 4
APP-1030-AR-001, “NI Room Numbering Plan at EL. 100’-0” & 107’-2”,” Revision 5
APP-1040-AR-001, “NI Room Numbering Plan at EL. 117’-6”,” Revision 4
APP-1050-AR-001, “NI Room Numbering Operating Deck EL. 135’-3”,” Revision 4
APP-1050-AR-002, “NI Room Numbering Plan at EL. 145’-9” & 153’-0”, Revision 4
APP-1060-AR-001, “NI Room Numbering Roof Plan EL. 153’-0” & 160’-6”,” Revision 4
APP-1070-AR-001, “NI Room Numbering Plan at EL. 284’-10” and Roof Elevations,” Revision 2

APP-4030-AR-001, “Annex Building Room Numbering El. 100’-0” & EL. 107’-2”,” Revision 6
APP-4040-AR-001, “Annex Building Room Numbering El. 117’-6” & EL. 126’-3”,” Revision 3
APP-4050-AR-001, “Annex Building Room Numbering El. 135’-3”, El. 158’-0”, El. 170’-0” & EL. 182’-6”,” Revision 3
APP-5000-AR-001, “Radwaste Building Room Numbering El. 100’-0” and Section View,” Revision 3
APP-2000-AR-901, “Turbine Building Room Numbering Section A-A,” Revision 1
APP-2000-AR-902, “Turbine Building Room Numbering Section B-B,” Revision 1
APP-2000-AR-903, “Turbine Building Room Numbering Section C-C,” Revision 0
APP-2000-AR-905, “Turbine Building Room Numbering Section E-E,” Revision 0
APP-2000-AR-906, “Turbine Building Room Numbering Section F-F,” Revision 0
APP-2040-AR-001, “Turbine Building Room Numbering Intermediate Level El. 117’-6”,” Revision 1
APP-2050-AR-001, “Turbine Building Room Numbering Intermediate Level El. 135’-3”,” Revision 0
APP-2050-AR-002, “Turbine Building Room Numbering El. 147’-6” & 149’-0”,” Revision 0
APP-2060-AR-001, “Turbine Building Room Numbering Plan at El. 161’-0”,” Revision 1
APP-2060-AR-002, “Turbine Building Room Numbering Plan at El. 187’-3”,” Revision 0
APP-2070-AR-001, “Turbine Building Room Numbering Roof Plan - El. 245’-0” & 226’-0”,” Revision 1
APP-6030-AR-001, “Diesel Generator Building El. 100’-0” & El. 128’-0” Room Numbering Plan,” Revision 2
APP-6030-AR-002, “Diesel Generator Building El. 123’-4” Room Numbering Plan,” Revision 2

Section 1A07
N&D SV4-CA20-GNR-000380, “SV4 Spent Fuel Pool (SFP) Wall Repairs for Weld Indications (ESR 50158610),” Revision 0
WEC APP-GW-Z0-105, “AP1000 Specification: Supplemental Requirements for Manufacture of Wrought and Cast Duplex and Super-Austenitic Stainless Steels and Their Fabrication,” Revision 0
CR 50161829
CR 50158634
MISTRAS Vacuum Box Examination Report P-22-VB-LT-302-0002, “Unit 4 CA20 Sub 3 South Wall,” Dated 11/23/2022
PCI Inspection Report NDE-919661-010, “South Wall Liner Plate FW2-I1, FW2-I3, & FW2-I4,” Dated 1/11/2022
PCI Report of Nondestructive Examination, Visible, Solvent Removable Liquid Penetrant Examination, “NDE-919661-001,” Dated 10/29/2022
Structural Integrity Associates Phased Array UT Examination Reports, “2201306 FW-3 & 3A, and FW 2-13 Weld Examination Report,” Revision 0
N&D SV4-CA20-GNR-000380, “SV4 Spent Fuel Pool (SFP) Wall Repairs for Weld Indications (ESR 50158610),” Revision 0

Section 1A08
Drawings
SV4-APP-1242-ER-104, “Auxiliary Building Area 2 Class 1E Conduit Arrangement Plan at Elevation 117’- 6”,” Revision 6
APP-1242-ER-102, “Class 1E Conduit Arrangement at Elevation 117’- 6” Room 12401,” Revision 7

Engineering & Design Coordination Reports (E&DCRs)
APP-ELS-GEF-850136, “MCR Lighting Conduit Spatial Separation and Labeling Relief,” Revision 0
Engineering Service Request 50080161 (Conduit Re-work)
Condition Reports
50130639 (Cable Tray Re-work)
51159238 (Conduit BZT01C Ground Connection)
QC Inspection Records (Cable Installation):
Work Package (WP) SV4-OCS-EWW-1096090
WP SV4-PMS-EWW-1135339
WP SV4-OCS-EWW-1135372
WP SV4-PMS-EWW-1135377
WP SV4-PMS-EWW-1135376
Procedures:
26139-000-4MP-T81C-N3303, Version 10

Section 1A09
PXS Valve/Accumulator Room A (Room 11206)
SV4-PMS-EWW-1164507, 26139-000-4MP-T81C-N3304 ATTACHMENT B-1 Inspection Record Continuation Sheet: SV4-PXS-EW-PLV120ATZD and SV4-PXS-EW-PLV120AMZD, Dated 10/31/2022
SV4-PMS-EWW-1164509, 26139-000-4MP-T81C-N3304 ATTACHMENT B Cable Terminations Inspection Record: SV4-PXS-EW-PLV118ATZB and SV4-PXS-EW-PLV118AMZB, Dated 10/1/2022
APP-1124-ER-102, Conduit Layout Containment Building 11206 PXS-A Room, Revision 12
Maintenance Floor (Room 11300)
SV4-PMS-EWW-1091299, 26139-000-4MP-T81C-N3303 ATTACHMENT A-1 Inspection Record Continuation Sheet: SV4-PSS-EW-PLV008CXB and SV4-PSS-EW-PLV024CXB, Dated 3/28/2022
SV4-PSS-EW-PLV008CXB[PT], 600V 2/C-8 AWG W/ GROUND & OVERALL SHIELD, Revision 4
SV4-PSS-EW-PLV024CXB[PT], 600V 2/C-8 AWG W/ GROUND & OVERALL SHIELD, Revision 4

Section 1A10
Division B I&C Penetration Room (Room 12304)
SV4-SGS-EW-PLV075AJZB[PT], 600V 1-TWSPR 16 AWG (Z), Revision 3
SV4-SGS-EW-PLV075AKZB[PT], 600V 1-TWSPR 16 AWG (Z), Revision 3
SV4-SGS-EW-PLV075BJZB[PT], 600V 1-TWSPR 16 AWG (Z), Revision 3
SV4-SGS-EW-PLV075BKZB[PT], 600V 1-TWSPR 16 AWG (Z), Revision 3
SV4-SGS-EW-PLV057BRZB[PT], 600V 1-TWSPR 16 AWG (Z), Revision 2
SV4-SGS-EW-PLV233BKZB[PT], 600V 1-TWSPR 16 AWG (Z), Revision 3
SV4-SGS-EW-PLV233BLZB[PT], 600V 1-TWSPR 16 AWG (Z), Revision 3
SV4-SGS-EWW-1135462, 26139-000-4MP-T81C-N3303 Attachment A-1 - Cable Installation Inspection Record: SV4-SGS-EW-PLV075AKZB, SV4-SGS-EW-PLV075AJZB, SV4-SGS-EW-PLV075BKZB, and SV4-SGS-EW-PLV075BJZB, Dated 10/6/2022
SV4-SGS-EWW-1135462, 26139-000-4MP-T81C-N3303 Attachment A-1 - Cable Installation Inspection Record: SV4-SGS-EW-PLV040BRZB, SV4-SGS-EW-PLV233BKZB, and SV4-SGS-EW-PLV233BLZB, Dated 11/2/2022

Division D I&C Penetration Room (Room 12305)

SV4-SGS-EW-PLV057BKXD[PT], 600V 2/C-12 AWG W/ SHIELD, Revision 1
SV4-SGS-EWW-1135462, 26139-000-4MP-T81C-N3303 Attachment A-1 - Cable Installation Inspection Record: SV4-SGS-EW-PLV057BKXD, Dated 11/4/2022

Demineralizer/Filter Access Area (Room 12251)
SV4-CVS-EW-PLV136BAXC[PT], 600V 2/C-12 AWG W/ SHIELD, Revision 4
SV4-RCS-EWW-1116914, 26139-000-4MP-T81C-N3304 ATTACHMENT B-1 Inspection Record Continuation Sheet: SV4-CVS-EW-PLV136BAXC, Dated 10/26/2022

Division B Battery Room 2 (Room 12204)
SV4-IDSB-EW-EA8AAYB[PT], 600V 2/C-14 AWG W/SHIELD, Revision 1
SV4-IDSB-EW-EA8AFYB[PT], 600V 4/C-14 AWG W/SHIELD, Revision 1
SV4-IDSB-EW-EA8UYB[PT], 600V 4/C-14 AWG W/SHIELD, Revision 2
SV4-IDSB-EW-EA8VYB[PT], 600V 4/C-14 AWG W/SHIELD, Revision 2
SV4-IDSB-EW-EA8XYB[PT], 600V 4/C-14 AWG W/SHIELD, Revision 2
SV4-IDSB-EW-EA8YYB[PT], 600V 4/C-14 AWG W/SHIELD, Revision 1
SV4-IDS-EWW-1115152, 26139-000-4MP-T81C-N3304 ATTACHMENT B-1 Inspection Record Continuation Sheet: SV4-IDSB-EW-EA8AAYB, SV4-IDSB-EW-EA8AFYB, SV4-IDSB-EW-EA8UYB, SV4-IDSB-EW-EA8VYB, SV4-IDSB-EW-EA8XYB, and SV4-IDSB-EW-EA8YYB, Dated 11/12/2022

Section 1A11
SV3-1278-ITR-800816, “PCS Storage Tank Structural Behavior Inspection Report, Unit 4,” Revision 0

Section 1A12
Surveys
SV4-1200-ITR-800819, Unit 4 Seismic Gap Verification Wall 84 Along Column Line 11 from Just West of I to L, Elevation 100’-0” to 117’-6”, Revision 0
SV4-1200-ITR-800819, Unit 4 Seismic Gap Verification Wall 84 Along Column Line 11 from Just West of I to L, Elevation 100’-0” to 117’-6”, Revision 1
SV4-1200-ITR-801819, Unit 4 Seismic Gap Verification Wall 124 Along Column Line 11 from Just West of I to L, Elevation 117’-6” to 135’-3”, Revision 0
SV4-1260-ITR-800819, Unit 4 Seismic Gap Verification Auxiliary Building Roof, between column Line I and Column Line Q, Elevation 155'-6" to 156'-0", Revision 0
SV4-4030-ITR-800819, Unit 4 Seismic Gap Verification Auxiliary & Annex Building, EL. 100'-0", Revision 0
SV4-4040-ITR-800819, Unit 4 Seismic Gap Verification Auxiliary & Annex Building, EL. 117'-6", Revision 0
SV4-4050-ITR-800819, Unit 4 Seismic Gap Verification Auxiliary & Annex Building, EL. 135'-3", Revision 0

Drawings
SV4-4040-AG-101, Annex Building Floor Plan EL 115’-8”, EL 117’-6” & EL 126’-3”, Revision 3
SV4-4050-AG-101, Annex Building Floor Plan EL 135’-3”, EL 158’-0”, Revision 3
SV4-4060-AG-101, Annex Building Roof Plan, Revision 6
SV4-1260-AG-101, Auxiliary Building Architectural Roof Plan, Revision 3
SV4-4030-AG-101, Annex Building Roof Plan EL 100’0” & 107’-2”, Revision 5
SV4-2000-A0-050, Turbine Building First Bay Architectural Shake Space Seals and Covers Plans, Section and Notes, Revision 3

Section 1A13
SV4-FWS-ITR-800561, “ITAAC Technical Report - Unit 4: DDS Feedwater Flow Measurement Input,” Revision 0
C.2.5.04.04a-U4-PRF, “Principle Closure Document Review - APP-GW-GL-046 ‘AP1000 Power Calorimetric Uncertainty Methodology Assuming a Generic Flow Measurement,’ Revision 0,” 11/2/22
SV4-JE25-VQQ-001, "Quality Release & Data Package for JE25 SV4," Revision 0
APP-GW-GL-046, "AP1000 Power Calorimetric Uncertainty Methodology Assuming a Generic Flow Measurement," Revision 0
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SV4-FWS-P0W-800003, "U4 Install Turbine Bldg FWS Piping for ISO SV4-FWS-PLW-02AA and 02D," Revison 0
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SV4-FWS-JSW-1113143, "U4 Turbine Bldg Install FWS Instr SV4-FWS-JE-PT060, -TE062A, -TE062B, Tubing & Supports, El. 120'-6, Rm 20400, Areas 4, 5," Revision 0
SV4-FWS-P0W-1011775, "U4 Install Turbine Building FWS LB Piping (Sequence 6) for ISO SV4-FWS-PLW-02F," Revision 0
SV4-FWS-JSW-1113132, "U4 Turbine Bldg Install FWS Instr SV4-FWS-JE-PT059, -TE061A, -TE061B, Tubing & Supports, El 120'-6, RM 20400, Areas 4, 5," Revision 0

Section 1P01
APP-GW-GAP-420, "Engineering and Design Coordination Reports," Revision 21
APP-GW-GAP-428, "Nonconformance and Disposition Report," Revision 20
ND-AD-002, "Nuclear Development Program Corrective Action Program," Version 32.0
ND-AD-002-027, "Nonconforming Items," Version 10.0
ND-AD-002-028, "Corrective Action Program Instructions," Version 3.1

Section 1P02
APP-G1-V8-001, AP1000 Electrical Installation Specification, Revision 11
APP-EW00-V8M-850000, Cable Installation Manual, Revision 0
26139-000-4MP-T81C-N3305, Construction Electrical Testing, Revision 11
SV0-EY01-V0M-100, Vogtle Unit 3 & 4 Electrical Penetration Assembly (EPA) Multipurpose Manual: EPA Installation and Maintenance Manual, Revision 1
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CR 50164626

LIST OF ACRONYMS

ADS	Automatic Depressurization System
AOV	Air Operated Valve
ASME	American Society of Mechanical Engineers
CAP	Corrective Action Program
CCS	Component Cooling Water System
CFR	Code of Federal Regulations
CIV	Containment Isolation Valve
CNS	Containment System
CNS	containment system
COL	Combined License
CR	Condition Report
cROP	Construction Reactor Oversight Process
E&DCR	Engineering and Design Coordination Report
I&C	Instrumentation and Control
ICN	ITAAC Closure Notice
IDS	Class 1E dc and Uninterruptible Power Supply System
IEEE	Institute of Electrical and Electronic Engineers
IMC	Inspection Manual Chapter
IP	Inspection Procedures
ITAAC	Inspections, Tests, Analysis, and Inspection Criteria
LEFM	Leading Edge Flowmeter
MCR	Main Control Room
NCV	Noncited Violation
NRC	Nuclear Regulatory Commission
NSR	Nonsafety-Related
N&D	Nonconformance and Disposition Report
PCD	Principal Closure Document
PCS	Passive Containment Cooling System
PD	Performance Deficiency
PMS	Protection and Safety Monitoring System
PXS	Passive Core Cooling System
QA	Quality Assurance
QC	Quality Control
RCS	Reactor Coolant System
RSR	Remote Shutdown Room
SNC	Southern Nuclear Company
SR	Safety-Related
SSC	Structure, System, and Component
S&W	Stone and Webster
UFSAR	Updated Final Safety Analysis Report
VEGP	Vogtle Electric Generating Plant
WEC	Westinghouse Electric Company

ITAAC INSPECTED

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
13	2.1.02.02a	2.a) The components identified in Table 2.1.2-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.1.2-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.1.2-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.1.2-2 as ASME Code Section III meet ASME Code Section III requirements. 4.a) The components identified in Table 2.1.2-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure. 4.b) The piping identified in Table 2.1.2-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure.	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III. A hydrostatic test will be performed on the components and piping required by the ASME Code Section III to be hydrostatically tested. Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability. Inspection will be performed for the existence of an LBB evaluation report or an evaluation report on the protection from dynamic effects of a pipe break. Section 3.3, Nuclear Island Buildings, contains the design descriptions and inspections, tests, analyses, and acceptance criteria for protection from the dynamic effects of pipe rupture.	The ASME Code Section III design reports exist for the as-built components and piping identified in Tables 2.1.2-1 and 2.1.2-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds. A report exists and concludes that the results of the hydrostatic test of the components and piping identified in Table 2.1.2-1 and Table 2.1.2-2 as ASME Code Section III conform with the requirements of the ASME Code Section III. A report exists and concludes that each of the as-built lines identified in Table 2.1.2-2 for which functional capability is required meets the requirements for functional capability. An LBB evaluation report exists and concludes that the LBB acceptance criteria are met by the as-built RCS piping

13	2.1.02.02a	5.b) Each of the lines identified in Table 2.1.2-2 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability. 6. Each of the as-built lines identified in Table 2.1.2-2 as designed for LBB meets the LBB criteria, or an evaluation is performed of the protection from the dynamic effects of a rupture of the line.		and piping materials, or a pipe break evaluation report exists and concludes that protection from the dynamic effects of a line break is provided.
33	2.1.02.08d.ii	8.d) The RCS provides automatic depressurization during design basis events.	ii) Inspections and associated analysis of each fourth-stage ADS sub-loop (four valves and associated piping connected to each hot leg) will be conducted to verify the line routing is consistent with the line routing used for design flow resistance calculations.	ii) The calculated flow resistance for each fourth-stage ADS sub-loop valves and piping is: Loop 1: Sub-loop A: < 5.91x10-7 ft/gpm2 Sub-loop C: < 6.21x10-7 ft/gpm2 Loop 2: Sub-loop B: < 4.65x10-7 ft/gpm2 Sub-loop D: < 6.20x10-7 ft/gpm2
90	2.2.01.01	1. The functional arrangement of the CNS and associated systems is as described in the Design Description of this Section 2.2.1.	Inspection of the as-built system will be performed.	The as-built CNS conforms with the functional arrangement as described in the Design Description of this Section 2.2.1.
561	C.2.5.04.04a	4. The plant calorimetric uncertainty and plant instrumentation performance is bounded by the 1%	Inspection will be performed of the plant operating instrumentation installed for feedwater flow measurement, its	a) The as-built system takes input for feedwater flow measurement from a Caldon [Cameron] LEFM CheckPlus™

		calorimetric uncertainty value assumed for the initial reactor power in the safety analysis.	associated power calorimetric uncertainty calculation, and the calculated calorimetric values. Inspection will be performed of the plant operating instrumentation installed for feedwater flow measurement, its associated power calorimetric uncertainty calculation, and the calculated calorimetric values. Inspection will be performed of the plant operating instrumentation installed for feedwater flow measurement, its associated power calorimetric uncertainty calculation, and the calculated calorimetric values.	System. b) the power calorimetric uncertainty calculation documented for that instrumentation is based on an accepted Westinghouse methodology and the uncertainty values for that instrumentation are not lower than those for the actual installed instrumentation; and c) the calculated calorimetric power uncertainty measurement values are bounded by the 1% uncertainty value assumed for the initial reactor power in the safety analysis.
597	2.6.03.02.i	2. The seismic Category I equipment identified in Table 2.6.3-1 can withstand seismic design basis loads without loss of safety function.	i) Inspection will be performed to verify that the seismic Category I equipment identified in Table 2.6.3-1 is located on the Nuclear Island. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-built equipment including anchorage is seismically	i) The seismic Category I equipment identified in Table 2.6.3-1 is located on the Nuclear Island. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-built equipment including anchorage is seismically bounded by the tested or analyzed conditions

			bounded by the tested or analyzed conditions.	seismically bounded by the tested or analyzed conditions.
616	2.6.03.07	7. The IDS dc battery fuses and battery charger circuit breakers, and dc distribution panels, MCCs, and their circuit breakers and fuses, are sized to supply their load requirements. 8. Circuit breakers and fuses in IDS battery, battery charger, dc distribution panel, and MCC circuits are rated to interrupt fault currents. 9. The IDS batteries, battery chargers, dc distribution panels, and MCCs are rated to withstand fault currents for the time required to clear the fault from its power source. 10. The IDS electrical distribution system cables are rated to withstand fault currents for the time required to clear the fault from its power source.	Analyses for the as-built IDS dc electrical distribution system to determine the capacities of the battery fuses and battery charger circuit breakers, and dc distribution panels, MCCs, and their circuit breakers and fuses, will be performed. Analyses for the as-built IDS dc electrical distribution system to determine fault currents will be performed. Analyses for the as-built IDS dc electrical distribution system to determine fault currents will be performed. Analyses for the as-built IDS dc electrical distribution system to determine fault currents will be performed.	Analyses for the as-built IDS dc electrical distribution system exist and conclude that the capacities of as-built IDS battery fuses and battery charger circuit breakers, and dc distribution panels, MCCs, and their circuit breakers and fuses, as determined by their nameplate ratings, exceed their analyzed load requirements. Analyses for the as-built IDS dc electrical distribution system exist and conclude that the analyzed fault currents do not exceed the interrupt capacity of circuit breakers and fuses in the battery, battery charger, dc distribution panel, and MCC circuits, as determined by their nameplate ratings. Analyses for the as-built IDS dc electrical distribution system exist and conclude that the IDS dc electrical distribution system cables will withstand the analyzed fault currents, as determined by manufacturer’s ratings, for the time required to clear the fault from its power

				source as determined by the circuit interrupting device coordination analyses. Analyses for the as-built IDS dc electrical distribution system exist and conclude that the IDS dc electrical distribution system cables will withstand the analyzed fault currents, as determined by manufacturer's ratings, for the time required to clear the fault from its power source as determined by the circuit interrupting device coordination analyses.
759	3.3.00.01	1. The physical arrangement of the nuclear island structures and the annex building is as described in the Design Description of this Section 3.3 and Figures 3.3-1 through 3.3-14. The physical arrangement of the radwaste building, the turbine building, and the diesel generator building is as described in the Design Description of this Section 3.3.	An inspection of the nuclear island structures, the annex building, the radwaste building, the turbine building, and the diesel generator building will be performed.	The as-built nuclear island structures, the annex building, the radwaste building, the turbine building, and the diesel generator building conform with the physical arrangement as described in the Design Description of this Section 3.3 and Figures 3.3-1 through 3.3-14.
763	3.3.00.02a.i.d	2.a) The nuclear island structures, including the critical sections listed in Table 3.3-7, are seismic Category I and are designed and constructed to	i) An inspection of the nuclear island structures will be performed. Deviations from the design due to as-built conditions will be analyzed for the design basis	i) A report exists which reconciles deviations during construction, including Table 3.3-1 wall and floor thicknesses, and concludes that the as-

		withstand design basis loads as specified in the Design Description, without loss of structural integrity and the safety-related functions. 3.) Walls and floors of the nuclear island structures as defined on Table 3.3-1 except for designed openings or penetrations, provide shielding during normal operations.	loads, and for radiation shielding.	built structures in the radiologically controlled area of the auxiliary building, including the critical sections, conform to the approved design and will withstand the design basis loads specified in the Design Description without loss of structural integrity or the safety-related functions, and without impacting compliance with the radiation protection licensing basis.
799	3.3.00.07d.i	7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.	Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: i) Within the main control room and remote shutdown room (non-hazard areas), the minimum separation for low-voltage power cables and below is defined by one of the following: 1) For configurations involving open configurations to enclosed configurations with low-voltage power cables, the minimum	Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: i) Within the main control room and remote shutdown room (non-hazard areas) the minimum separation for low-voltage power cables and below meets one of the following: 1) For configurations involving open configurations to enclosed configurations with low-voltage power cables, the vertical separation is 3 inches or more and the horizontal separation

			vertical separation is 3 inches, and the minimum horizontal separation is 1 inch. 2) For configurations involving an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 3) For configurations involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions. 4) For configurations involving open configurations, and an enclosed raceway and an open raceway, with instrumentation and control cables, the minimum separation is 1 inch in both horizontal and vertical directions.	is 1 inch or more. 2) For configurations that involve an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation may be reduced to 1 inch if the enclosed raceway is below the open raceway. 3) For configurations that involve enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions. 4) For configurations that involve open configurations, and an enclosed raceway and an open raceway, with instrumentation and control cables, the minimum separation is 1 inch in both horizontal and vertical directions.
800	3.3.00.07d.ii.a	7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.	Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.a) Within other plant areas (hazard areas), the	Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.a) Within other plant areas inside containment (hazard areas), the separation meets one

			minimum separation is defined by one of the following: 1) The minimum vertical separation is 5 feet, and the minimum horizontal separation is 3 feet. 2) The minimum vertical separation is 12 inches, and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤2/0 AWG. This minimum vertical separation is 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches, and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation is 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees. 4) For configurations that involve exclusively limited energy content cables (instrumentation and	of the following: 1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more. 2) The minimum vertical separation is 12 inches, and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤2/0 AWG. This minimum vertical separation may be reduced to 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches, and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation may be reduced to 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees. 4) For configurations that involve exclusively limited energy content cables (instrumentation and

			control), the minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch. 5) For configurations involving an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configuration involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions. 7) The minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.	control), the minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch. 5) For configurations that involve an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configurations that involve enclosed raceways, the minimum vertical and horizontal separation is 1 inch. 7) The minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.
801	3.3.00.07d.ii.b	7.d) Physical separation is maintained between Class 1E divisions and between Class 1E divisions and non-Class 1E cables.	Inspections of the as-built raceways that route Class 1E cables will be performed to confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.b) Within other plant areas (limited hazard	Results of the inspection will confirm that the separation between raceways that route Class 1E cables of different divisions, and between raceways that route Class 1E cables and raceways that route non-Class 1E cables is consistent with the following: ii.b) Within other plant areas inside the non-radiologically controlled area of the

			areas), the minimum separation is defined by one of the following: 1) The minimum vertical separation is 5 feet, and the minimum horizontal separation is 3 feet. 2) The minimum vertical separation is 12 inches, and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤ 2/0 AWG. This minimum vertical separation is 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches, and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation is 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees. 4) For configurations that involve exclusively limited energy content cables	auxiliary building (limited hazard areas), the separation meets one of the following: 1) The vertical separation is 5 feet or more and the horizontal separation is 3 feet or more. 2) The minimum vertical separation is 12 inches, and the minimum horizontal separation is 6 inches for raceways containing only instrumentation and control and low-voltage power cables ≤ 2/0 AWG. This minimum vertical separation may be reduced to 3 inches for the configuration with a conduit above and crossing the open tray at an angle equal to or greater than 45 degrees. 3) The minimum vertical separation is 12 inches and the minimum horizontal separation is 6 inches between a conduit and an open configuration for low-voltage power cables greater than 2/0 AWG but not greater than 750 kcmil. The vertical separation may be reduced to 3 inches if a conduit is above and crossing an open tray at an angle equal to or greater than 45 degrees. 4) For configurations that

			(instrumentation and control), the minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch. 5) For configurations involving an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configuration involving enclosed raceways, the minimum separation is 1 inch in both horizontal and vertical directions. 7) The minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.	involve exclusively limited energy content cables (instrumentation and control), the minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch. 5) For configurations that involve an enclosed raceway and an open raceway with low-voltage power cables, the minimum vertical separation is 1 inch if the enclosed raceway is below the open raceway. 6) For configurations that involve enclosed raceways, the minimum vertical and horizontal separation is 1 inch 7) The minimum vertical separation is 1 inch, and the minimum horizontal separation is 1 inch for configurations with a non-safety conduit and a free air safety cable with low-voltage power cables and below.
816	3.3.00.10.ii	10.The shield building roof and PCS storage tank support and retain the PCS water sources. The PCS storage tank has a stainless-steel liner which provides a barrier on the inside surfaces of the tank. Leak chase channels are provided on the tank boundary liner welds.	ii) An inspection of the PCS storage tank exterior tank boundary and shield building tension ring will be performed before and after filling of the PCS storage tank to the overflow level. The vertical elevation of the shield building roof will be measured at a location at the outer	ii) A report exists and concludes that inspection and measurement of the PCS storage tank and the tension ring structure, before and after filling of the tank, shows structural behavior under normal loads to be acceptable. iii) A report exists and concludes that there

			radius of the roof (tension ring) and at a location on the same azimuth at the outer radius of the PCS storage tank before and after filling the PCS storage tank. iii) An inspection of the PCS storage tank exterior tank boundary and shield building tension ring will be performed before and after filling of the PCS storage tank to the overflow level. The boundaries of the PCS storage tank and the shield building roof above the tension ring will be inspected visually for excessive concrete cracking.	is no visible water leakage from the PCS storage tank through the concrete and that there is no visible excessive cracking in the boundaries of the PCS storage tank and the shield building roof above the tension ring.
819	3.3.00.13	13. Separation is provided between the structural elements of the turbine and annex buildings and the nuclear island structure. This separation permits horizontal motion of the buildings in the safe shutdown earthquake without impact between structural elements of the buildings.	An inspection of the separation of the nuclear island from the annex and turbine building structures will be performed. The inspection will verify the specified horizontal clearance between structural elements of the adjacent buildings, consisting of the reinforced concrete walls and slabs, structural steel columns and floor beams.	The minimum horizontal clearance above floor elevation 100′-0″ between the structural elements of the annex building and the nuclear island is 3 inches. The minimum horizontal clearance above floor elevation 100′-0″ between the structural elements of the turbine building and the nuclear island is 3 inches.